



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,100	07/13/2001	Norman F. Robillard	1769-92	1322

7590 12/19/2002

NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Road
Arlington, VA 22201

EXAMINER

OCAMPO, MARIANNE S

ART UNIT

PAPER NUMBER

1723

DATE MAILED: 12/19/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Objections

1. Claims 4 – 6 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4 – 5, 9 - 10, 15 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a). Concerning claims 4, 9, 15 and 20, the limitation “ an open area of at least about 40%” is deemed indefinite because it is unclear what values or range of values are considered “about 40%”.

b). Claims 5 and 10 recite the limitation “an open area of between about 50% to about 60%”, and this limitation makes the claims also indefinite because it is unclear what values or range of values are considered or being included in the range of “between about 50% to about 60%”.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 3, 7 – 8, 12 - 13 and 16 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US5,252,207) in view of Dunn et al. (US 4,664,684).

6. Concerning claim 1, Miller et al. discloses a filter cartridge (10) having a multilayer pleated filter media (20) comprised of a filter membrane layer (23) and at least one support layer (21, 24) for the filter membrane layer (23) wherein the at least one support layer is an extruded polymeric mesh, as in cols. 3 - 5. Miller et al. fail to disclose the polymeric mesh forming the at

least one support layer (21, 24) being an expanded polymeric mesh. Dunn et al. teach a multilayer pleated filter media (10) comprising a filter layer (12) and at least one support layer (11, 13) wherein the support layer is an expanded plastic (polymeric) mesh, as in figs. 1 – 2 & 5 and in cols. 1 – 2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the polymeric mesh of Miller et al. by substituting it for an expanded polymeric/plastic mesh taught by Dunn et al., in order to provide an alternative and improved design for the support layers which allows greater stability for supporting the filter membrane layer at the same time providing sufficient (a great number) of openings/open area for fluid flow compared to conventional (i.e. non-expanded) polymeric meshes.

7. With regards to claim 2, Miller et al. further discloses the filter media (20) including at least a pair of the support layers (21, 24) which sandwich the filter membrane layer (24) therebetween, as in cols. 3 – 4.

8. Regarding claim 3, Miller et al. as modified by Dunn et al. further teach the expanded polymeric mesh (11, 13) being formed of a dense plurality of generally diamond-shaped apertures, as in figs. 1 – 2 and 5. The same motivation provided in claim 1 above is applied here.

9. With respect to claim 7, Miller et al. further discloses the cartridge (10) including a concentrically disposed slotted core (11) and cage members (30, 41 or 70) and the multi-layer pleated filter media (20) being positioned in an annular space between the core (11) and cage

members (30, 41 or 70), as in figs. 1 – 2, 6 and 9. Miller et al. also discloses the filter media (20) including an inner filter membrane layer (23) sandwiched between a pair of the support layers (21, 24) which are formed of polymeric meshes, as in cols. 3 – 4. Miller et al. as modified by Dunn et al. teach the support layers being expanded polymeric/plastic meshes. The same motivation applied in claim 1 is applied here.

10. Concerning claim 8, Miller et al. as modified by Dunn et al. further teach the expanded polymeric mesh (11, 13) being formed of a dense plurality of generally diamond-shaped apertures, as in figs. 1 – 2 and 5. The same motivation provided in claim 1 above is applied here.

11. With respect to claim 12, Miller et al. further discloses pleats of the multiplayer pleated filter media (20) having elongate pleat axes disposed substantially parallel to a central longitudinal axis of the filter cartridge (10), as in figs. 1 – 2, and Miller et al. as modified by Dunn et al., teach the expanded polymeric mesh being formed of a dense plurality of generally diamond-shaped apertures having respective long and short dimensions, as in fig. 5, and the expanded polymeric mesh (13) being disposed such that the long dimensions of the diamond-shaped apertures thereof are oriented substantially transverse to the elongate pleat axes of the pleated filter media (12, or 20), as in figs. 1 – 2 of Dunn et al.

12. Concerning claim 13, Miller et al. also discloses the filter media including a pair of support layers (21, 24) which are both formed of polymeric meshes sandwiching the filter membrane layer (23) therebetween, as in cols. 3 - 4.

13. Regarding claim 16, Miller et al. disclose a generally cylindrical filter cartridge(10) comprising an inner core member (11), an outer cage member (30, 40 or 70) concentrically positioned around the inner core member (11) so as to establish an annular space therebetween and multilayer pleated filter media (20) positioned in the annular space between the inner core (11) and the outer cage (30, 40 or 70) members, wherein the filter media (20) includes a filter membrane layer (23) and at least one support layer (21 or 24) for the filter membrane layer (23) formed of a polymeric mesh, and wherein pleats of the multilayer pleated filter media (20) have elongate pleat axes disposed substantially parallel to a central longitudinal axis of the filter cartridge, as in figs. 1 – 2 and 5 and in cols. 3 – 12. Miller et al. fail to disclose the polymeric mesh support layer being an expanded polymeric mesh, and being formed of a dense plurality of generally diamond-shaped apertures having respective long and short dimensions and wherein the expanded polymeric mesh is disposed such that the long dimensions of the diamond-shaped apertures thereof are oriented substantially transverse to the elongate pleat axes of the pleated media. Dunn et al. teach a multilayer pleated filter media (10) comprising a filter layer (12) and at least one support layer (11, 13) wherein the support layer is an expanded plastic (polymeric) mesh, as in figs. 1 – 2 & 5 and in cols. 1 – 2. Dunn et al. also teach the expanded polymeric/plastic mesh being formed of a dense plurality of generally diamond-shaped apertures

having respective long and short dimensions and the mesh is disposed such that the long dimensions thereof are oriented substantially transverse to the elongate pleat axes of the pleated filter media (12), as in figs. 1 – 2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the polymeric mesh of Miller et al. by substituting it for an expanded polymeric/plastic mesh taught by Dunn et al., in order to provide an alternative and improved design for the support layers which allows greater stability for supporting the filter membrane layer at the same time providing sufficient (a great number) of openings/open area for fluid flow compared to conventional (i.e. non-expanded) polymeric meshes.

14. With regards to claim 17, Miller et al. further disclose the filter media (20) including a pair of support layers (polymeric meshes 21 and 24) which sandwich the filter membrane layer (23) therebetween, as in fig. 2.

15. Claims 9 – 10, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. and Dunn et al. as applied to claims 1, 7 and 12, respectively above, and further in view of Foo (US 5,700,304).

16. With respect to claims 9 – 10, 15 and 20, although Miller et al. as modified by Dunn et al. do not teach explicitly the expanded polymeric mesh/film exhibiting an open area of at least about 40% (as in claims 4, 9, 15 and 20) and an open area of between about 50% to about 60% (as in claims 5 and 10). Foo teaches an expanded metal sheet as a support layer(s) for the

filter layer of a filter cartridge, similar to those expanded polymeric meshes of Dunn et al. generally exhibiting an open area of at least about 40%, in particular at least 50% to at least 60%, as in cols. 5 - 6. It is considered well known to one of ordinary skill in the art at the time of the invention to modify the open area of an expanded polymer mesh to any value, to a value of at least 40%, or any value between about 50% to 60%, as taught by Foo, in order to provide an expanded support layer/sheet (may it be made of metallic or polymeric material) which is capable of not only withstanding pressures exerted by the filter material during filtration to maintain physical stability but also provides enough/sufficient openings for fluid flow therethrough.

17. Claims 11, 14 and 18 - 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. and Dunn et al. as applied to claims 1, 7 and 12, respectively above, and further in view of Ashelin et al. (US 5,154,827).

18. Regarding claims 11, 14 and 18, Miller et al. as modified by Dunn et al. fail to teach the filter membrane layer and the expanded polymeric film mesh (net)/support layers each consisting of polytetrafluoroethylene (PTFE). Ashelin et al. teach a filter cartridge (11) similar to that of Miller et al. as modified by Dunn et al., including a multilayer pleated filter media (15) including a filter membrane layer (21) and a pair of net support layers/polymeric meshes (17 & 19) each consisting of PTFE, as in fig. 1 and in col. 4. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the

filter membrane layer and the expanded polymeric mesh (i.e. support layers) to particularly that of PTFE, in order to provide an alternative and improved filter cartridge formed of wholly polyfluorocarbon (i.e. PTFE) material which is chemically and physiologically inert which are suitable in most microfiltration applications, can be used in high temperature conditions and is also chemically and physically resistant (see cols. 1 – 3 of Ashelin et al.).

19. With respect to claim 19, Ashelin et al. further teach the filter cartridge (11) having an inner core (23) and an outer cage member (25), wherein each of the inner core (23) and outer cage (25) members consist of PTFE (polytetrafluoroethylene), as in col. 4, lines 30 - 34.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 4,663,041 (Miyagi et al.) and 6,464,870B1 (Castellanos et al.).

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

23. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

W.L.W.

M.S.O.

December 16, 2002

W.L. Walker
W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700